PEND OREILLE LAKE

1976 STATUS REPORT

Kokanee Harvest

The estimated minimum kokanee catch on Pend Oreille Lake as of 1 October 1976 was 206,000 as compared to 430,000 at the same date in 1975.

The 1976 kokanee catch on the lake will be the lowest recorded catch since the census began in the early 1950s. The lowest catch approaching 1976 was recorded in 1974 when 319,000 kokanee were caught.

The low kokanee catch for 1976 was primarily because of the low spawning run in 1972.

Next year's fish entered this year's catch in good numbers and that year class should be relatively strong.

Kamloops Harvest

The trophy Kamloops catch for 1976 will probably reach or exceed last year's estimated catch of 1,100 fish. The numbers of Kamloops caught is holding up but the decline in average weight still continues.

Plankton

Daphnia, a zooplankter of major importance as a kokanee food item, was not found in zooplankton samples until August of this year. Abundance of this organism appears to have been much lower in 1975 and 1976 than in 1974 and preceding seasons for which data is available.

This shift in zooplankton abundance and composition may be the result of an increased abundance of Mysis shrimp in the lake. The density of Mysis in Pend Oreille was higher in 1976 than in any preceding season.

Kokanee Life History

The trawling that we have completed has been very successful. We have

been able to collect several hundred kokanee in a 10-minute tow. These samples have provided many kokanee stomachs for food habit analysis and samples of all age classes of kokanee including the 0 age fish (this year's fry).

Numerous equipment adjustments were made in this initial shake-down year.

Kamloops Life History

In 1976 we began evaluating the life history of Kamloops trout in Pend Oreille Lake.

Lightning Creek and the Pack River drainage are the most important spawning areas. Much of the spawning in the Pack River drainage occurred in the North Fork of Grouse Creek. In Lightning Creek most of the spawning occurred in the mainstem of the creek.

LIMNOLOGICAL STUDY OF LAKE PEND OREILLE, IDAHO
Contract DACW67-76-C-0079

Quarterly Report Submitted to Seattle District, Corps of Engineers
Period Covered --1 July 1976 to 30 September 1976

With initiation of the Pend Oreille Limnological Project in April, a standard sampling program was set up on a biweekly schedule and maintained to October. Beginning in October, the sampling schedule will be reduced to monthly intervals. During each period zooplankton and phytoplankton samples and temperature profiles were taken in each of three sampling areas. In late July, with the acquisition of laboratory materials, analysis of chlorophyll "a" was added to the standard sampling program.

Counts of zooplankton samples from the 1976 summer season are nearly complete. Analysis of zooplankton biomass and phytoplankton samples is proceeding with use of laboratory facilities provided by the University of Idaho Department of Fisheries Resources. All chlorophyll samples have been analyzed with use of the State Health and Welfare laboratory facility.

In addition to the standard Limnological program, we conducted night sampling to describe the horizontal distribution and abundance of Mysis relicta. Samples were also taken at monthly intervals to delimit the diurnal vertical distribution of Mysis throughout the season.

Water samples for nutrient analysis were taken in May, in cooperation with the Idaho Department of Health and Welfare. Since that time we have reached an agreement with the US Environmental Protection Agency, in which they will conduct all further nutrient analysis for this project at no cost. Sampling under this agreement was done in September, during maximum thermal stratification and will be conducted again during late winter overturn. We are doing standard water chemistry analysis of alkalinity, ph and conductance in conjunction with the nutrient sampling.

Data analysis has only begun, but preliminary results suggest that development of the Pend Oreille zooplankton community in 1976 was similar to that reported for 1975 (Rieman and Falter 1976). Daphnia was not found in zooplankton samples until August. Abundance of the cladocerans has remained relatively low. Bosmina was also delayed in seasonal appearance.

Some additional zooplankton sampling was conducted on Priest Lake during August, for comparison of plankton composition with that observed in Pend Oreille. Priest has also received Mysis introductions, and the present plankton composition in that lake supports our hypothesis that Mysis is responsible for the depressed abundance of Daphnia in Pend Oreille.

The Pend Oreille Mysis population density appears to have exceeded the level recorded in 1975. During June, Mysis composed more than 60% of the zooplankton biomass present. Abundance of Mysis was greatest in the southern portion of the lake. Vertical migration of Mysis was strong through July. As lake stratification progressed and transparency increased, vertical distribution was restricted. In September, few Mysis were found above 30m throughout the 24-hour period.

Throughout the 1976 field season, a special effort has been made to conduct a limnological program complimenting the ongoing fisheries investigations. Concurrent zooplankton sampling and echosounding data will be used to correlate fish distribution with food abundance and composition. This type of analysis could reveal the level of cropping kokanee exert on their food supply and provide some indication of how close the fish population is to carrying capacity as related to food supply. In addition, stomach samples collected throughout the season will be analyzed to provide information on food utilization. Eventually we hope to refine our stomach analysis to provide an actual estimate of kokanee feeding rate.

We feel that our wholistic approach to the Pend Oreille problem will provide a more complete understanding of the impact of Mysis introductions to the lake system as well as an understanding of the roll of food supply and the lake environment to growth, survival and development of year class strength in the kokanee population.

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